In the Claims

This listing of claims will replace all prior versions and listings of claims in this application.

1 (currently amended). A dual-lumen, reverse-flow catheter consisting essentially of an arterial lumen having an inner surface, an outer surface, a distal end, and a proximal end; and a venous lumen having an inner surface, an outer surface, a distal end, a proximal end and a single aperture at the most distal end, wherein the proximal ends of both lumens are attached to a removable hollow hub, such that the entire length of the venous lumen is in a co-axial configuration with the arterial lumen ~~such that~~and, when the lumens are separated from the hub, the arterial lumen can be further removed from within the venous lumen, and wherein the distal end of the arterial lumen extends through the single aperture at the most distal end of the venous lumen to terminate at a point beyond the distal end of the venous lumen, wherein the distal end of the arterial lumen comprises one aperture.

2 (canceled).

3 (currently amended). The catheter of ~~claim 2~~ claim 1, wherein the distal end of the arterial lumen extends between 5-10 cm beyond the aperture at the most distal end of the venous lumen.

4 (previously presented). The catheter of claim 3, wherein the distal end of the arterial lumen extends between 6-8 cm beyond the aperture at the most distal end of the venous lumen.

5 (previously presented). The catheter of claim 4, wherein the distal end of the arterial lumen extends 7 cm beyond the aperture at the most distal end of the venous lumen.

6 (currently amended). The catheter of ~~claim 2~~ claim 1, wherein the distal end of the venous lumen is tapered.

7 (currently amended). The catheter of ~~claim 2~~ claim 1, wherein the distal end of the arterial lumen is tapered.

8 -10 (cancelled)

11 (original). The catheter of claim 1, wherein the arterial lumen is disposed within the venous lumen in a circle-C configuration.

12 (previously presented). The catheter of claim 11, wherein the distal end of the arterial lumen extends between 5-10 cm beyond the aperture at the most distal end of the venous lumen.

13 (previously presented). The catheter of claim 12, wherein the distal end of the arterial lumen extends between 6-8 cm beyond the aperture at the most distal end of the venous lumen.

14 (previously presented). The catheter of claim 13, wherein the distal end of the arterial lumen extends 7 cm beyond the aperture at the most distal end of the venous lumen.

15 (original). The catheter of claim 11, wherein the distal end of the venous lumen is tapered.

16 (original). The catheter of claim 11, wherein the distal end of the arterial lumen is tapered.

17-23 (cancelled).

24 (previously presented). The catheter of claim 1, wherein the venous lumen comprises a plurality of apertures.

25 (original). The catheter of claim 24, wherein the apertures have a cross-sectional shape selected from the group consisting of circular, oval, or slits.

26 (original). The catheter of claim 1, wherein the catheter includes an agent selected from the group consisting of: antifibrin agents, antithrombin agents, anticoagulant agents, and antimicrobial agents.

27 (original). The catheter of claim 1, wherein the catheter is made from a substance selected from the group consisting of: thermoplastics, high performance engineering resins, polyethylene (PE), polypropylene (PP), polyvinylchloride (PVC), polyurethane, polytetrafluoroethylene (PTFE), polyether-ether ketone (PEEK), polyimide, polyamide, polyphenylene sulfide (PPS), polyphenylene oxide (PPO), polysufone, nylon, perfluoro(propyl vinyl ether) (PFA), and silicone.

28 (original). The catheter of claim 27, wherein additional substances for reducing kinking are included in making the catheter, wherein said additional substance is selected from the group consisting of: metals, stainless steel, nickel alloys, nickel-titanium alloys, or other alloys.

29-30 (cancelled).

31 (currently amended). A method for treating blood, said method comprising the steps of:

a) making an incision to a blood vessel; and

b) inserting into the blood vessel, in the direction of blood flow, a dual-lumen, reverse-flow catheter consisting essentially of an arterial lumen having an inner surface, an outer surface, a distal end, and a proximal end; and a venous lumen having an inner surface, an outer surface, a distal end, a proximal end, and a single aperture at the most distal end wherein the distal end of the arterial lumen extends through the single aperture at the most distal end of the venous lumen to a point beyond the most distal end of the venous lumen, wherein the proximal ends of both lumens are attached to a removable hollow hub and when the lumens are separated from the hub, the arterial and venous lumens can be further separated, such that the entire length of the venous lumen is in a co-axial configuration with the arterial lumen, wherein the distal end of the arterial lumen comprises one aperture and the distal end of the venous lumen comprises at least one aperture, and wherein blood from the blood vessel is drawn through the aperture at the distal end of the arterial lumen;

c) treating the drawn blood; and

d) returning the treated blood to the blood vessel through the single aperture at the most distal end of the venous lumen.

32 (original). The method of claim 31, further comprising the step of placing the catheter such that the arterial lumen is situated in a right atrium and the venous lumen is situated in a superior vena cava.

33 (original). The method of claim 31, further comprising the step of inserting a guide wire into the incision and feeding the distal end of the arterial lumen into the incision over the guide wire into the blood vessel.

34 (original). The method of claim 31, wherein the catheter includes a removable, hollow hub to which the catheter is connected and the venous lumen is separable from the arterial lumen, further comprising the steps of removing the catheter from the blood vessel and replacing the arterial lumen with a new arterial lumen.

35 (previously presented). The method of claim 31, wherein the blood vessel is selected from the group consisting of jugular vein, subclavian vein, hepatic vein, femoral vein, and inferior vena cava.